

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Thomas Eckel et al.
Serial No. : 09/485,288
Filed : July 2, 2000
For : FLAMERESISTANT ABS POLYCARBONATE
MOULDABLE MATERIALS
Art Unit : 1714
Examiner : Veronica P. Hoke

DECLARATION

I, Thomas Eckel, residing at Pfauenstr. 51, 41540 Dormagen, Germany, declare as follows:

- 1) that I have the following technical education and experience:
 - a) I am a chemist having studied at the Phillips-Universität of Marburg, Germany, from 1978 to 1987,
 - b) I received the degree of doctor rer. nat. at the Phillips-Universität of Marburg in the year of 1987,
 - c) I am employed by Bayer AG since July 1987 in the Research Department especially handling polymer blends;
- 2) that I am one of the inventors of U.S. Patent Application Serial No. 09/485,288, filed July 2, 2000
- 3) that the following tests were carried out under my immediate supervision and control:

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Experimental results**Component A**

A linear polycarbonate based on bisphenol A, with a relative solution viscosity of 1.252, as measured in CH_2Cl_2 as the solvent at 25 °C and at a concentration of 0.5 g/100 ml.

Component B

A graft polymer of 45 parts by weight of a copolymer of styrene and acrylonitrile in a ratio of 72:28 on 55 parts by weight of particulate, crosslinked polybutadiene rubber (average particle diameter d_{50} 0.30 μm), produced by emulsion polymerisation.

Component B1

- as Component B, but average particle diameter d_{50} 0.4 μm

Component B2

- as Component B, but average particle diameter d_{50} 0.19 μm

Component C

A styrene/acrylonitrile copolymer with a ratio by weight of styrene/acrylonitrile of 72:28 and a limiting viscosity 0.55 dl/g (as measured in dimethylformamide at 20 °C).

Component D

A mixture of m-phenylene-bis(di-phenyl-phosphate) ([®]Fyrolflex RDP supplied by Akzo) and triphenyl phosphate (TPP) in a ratio by weight of 3:1.

Component E

PTFE: polytetrafluoroethylene

Production and testing of moulding compositions

The components were mixed in a 3-litre internal kneader. Mouldings were produced in an Arburg Type 270 E injection moulding machine at 260 °C.

The tensile modulus of elasticity was determined according to DIN 53 457/ISO 527.

The tensile strength (tensile test) was determined according to ISO 527/DIN 53 455.

Stress cracking behavior is measured as follows:

A mixture of 60 % by volume toluene and 40 % by volume isopropanol was used as the test medium. The test specimens were pre-extended by means of an arcuate template and simultaneously stored for 5 minutes at room temperature in the test medium. The pre-extension was measured at which break occurs after storing the test specimen for y minutes at room temperature in the test medium.

Table 1

Example	A	B (comparison)	C (comparison)
Components [parts by weight]	83.8	83.8	83.8
A			
B	6.4	-	-
B.1	-	6.4	-
B.2	-	-	6.4
C	2.7	2.7	2.7
D	6.8	6.8	6.8
E ²⁾	0.24	0.24	0.24
PETS ¹⁾	0.4	0.4	0.4
Properties	56	50	36
α_k ISO 180 1A [kJ/m ²]			
tensile modulus of elasticity [N/mm ²]	2593	2583	2565
tensile strength [N/mm ²]	65.8	63.5	63.7
ESC behavior [break at ϵ_x after y min]	1.2 % /5:00	1.0 % /4.55	1.2 % /2:08

¹⁾ pentaerythritetetrastearate (release agent)

²⁾ polytetrafluoroethylene

The comparison examples only differ in the particle size of the graft polymer B. The compositions according to the invention contains a graft polymer having an average particle size of 0.3 μm which is within the claimed scope of the particle size of 0.2 μm to 0.35 μm . The comparative composition contains a graft polymer having an average particle size of 0.4 μm and 0.19 μm which is outside the claimed scope of particle size. It can be seen that the composition A according to the invention exhibit a better notched impact strength, tensile strength, tensile modulus of elasticity as well as ESC behavior (stress cracking resistance).

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

THOMAS ECKEL



Signed at Dormagen, this 28th day of November, 2001.

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